

WHAT IS CLAIMED IS:

1. A radial transverse electric polarizer device, comprising:
a substrate material having a first refractive index;
a plurality of elongated azimuthally oriented elements coupled to said substrate material, said elongated elements having a second refractive index, wherein said plurality of elements are periodically spaced apart to form a plurality of gaps such that said radial transverse electric polarizer device interacts with an electromagnetic radiation comprising first and second polarizations to reflect substantially all of the radiation of the first polarization and transmit substantially all of the radiation of the second polarization; and
a thin layer of absorbing material, said thin layer of absorbing material absorbing radiation at a wavelength of said electromagnetic radiation,
wherein said plurality of elongated elements are coated with said thin layer of absorbing material.
2. A radial transverse electric polarizer device according to claim 1,
wherein said first polarization is a transverse magnetic polarization and said second polarization is a transverse electric polarization.
3. A radial transverse electric polarizer device according to claim 1,
wherein said plurality of elongated elements are formed of an electrically conductive material at a wavelength of said electromagnetic radiation.
4. A radial transverse electric polarizer device according to claim 3,
wherein said electrically conductive material is selected from the group: aluminum, chrome, silver and gold.
5. A radial transverse electric polarizer device according to claim 1,
wherein said substrate material is formed of a dielectric material at a wavelength of said electromagnetic radiation.
6. A radial transverse electric polarizer device according to claim 5,

wherein said dielectric material is selected from the group: quartz, silicon oxide, silicon nitride, gallium arsenide and combinations thereof.

7. A radial transverse electric polarizer device according to claim 1, wherein said substrate material comprises a dielectric material.
8. A radial transverse electric polarizer device according to claim 1, wherein said thin layer of absorbing material is selected such that a portion of reflected radiation of the first polarization transformed into a secondary radiation of a second polarization is substantially absorbed by said thin layer of absorbing material.
9. A radial transverse electric polarizer device according to claim 8, wherein the radiation of the second polarization is minimally absorbed by said thin layer of absorbing material.
10. A radial transverse electric polarizer according to claim 9, wherein said thin layer of absorbing material substantially eliminates polarization flare in the transmitted radiation of a second polarization.
11. A radial transverse electric polarizer device according to claim 1, wherein said thin layer of absorbing material is selected from the group: Al_2O_3 and anodic oxidized aluminum.
12. A lithographic projection apparatus, comprising:
 - a radiation system configured to provide a projection beam of radiation;
 - a support structure configured to support a patterning device, the patterning device configured to pattern the projection beam according to a desired pattern;
 - a substrate table configured to hold a substrate;
 - a projection system configured to project the patterned beam onto a target portion of the substrate; and
 - a polarizer device constructed and arranged to polarize said beam of a radiation in a transverse electric polarization direction, said polarizer device comprising a plurality of

elongated elements and a thin layer of absorbing material, said thin layer of absorbing material absorbing radiation at a wavelength of said electromagnetic radiation,

wherein said plurality of elongated elements are coated with said thin layer of absorbing material.

13. A lithographic projection apparatus according to claim 12,
wherein said polarizer device further comprises:
a first layer of material having a first refractive index;
a second layer of material having a second refractive index; and
said plurality of elongated elements are azimuthally and periodically spaced apart,
and disposed between said first layer and said second layer, said plurality of elongated elements interact with said beam of radiation to transmit transverse electric polarization of said beam of radiation.

14. A lithographic projection apparatus according to claim 12,
wherein said polarizer device further comprises:
a substrate material having a first index; and
said plurality of elongated elements are azimuthally oriented and coupled with said substrate material, said elongated elements having a second refractive index, said plurality of elongated elements are periodically spaced apart to form a plurality of gaps such that said polarizer device interacts with the beam of radiation comprising first and second polarizations to reflect substantially all of the radiation of the first polarization and transmit substantially all of the radiation of the second polarization.

15. A lithographic projection apparatus according to claim 14,
wherein said thin layer of absorbing material is selected such that a portion of reflected radiation of the first polarization transformed into a secondary radiation of a second polarization is substantially absorbed by said thin layer of absorbing material.

16. A lithographic projection apparatus according to claim 14,
wherein the radiation of the second polarization is minimally absorbed by said thin layer of absorbing material.

17. A lithographic projection apparatus according to claim 14,
wherein said thin layer of absorbing material substantially eliminates polarization
flare in the transmitted radiation of a second polarization.
18. A lithographic projection apparatus according to claim 14,
wherein the second polarization is a transverse electric polarization.
19. A lithographic projection apparatus according to claim 12,
wherein said thin layer of absorbing material is selected from the group: Al_2O_3 and
anodic oxidized aluminum.
20. A lithographic projection apparatus according to claim 12,
wherein a wavelength range of said radiation beam is in the ultraviolet spectrum.
21. A lithographic projection apparatus according to claim 20,
wherein said wavelength range is between 365 nm and 126 nm.
22. A lithographic projection apparatus according to claim 12,
wherein said wavelength range is in the extreme ultraviolet.
23. A device manufacturing method, comprising:
projecting a patterned beam of radiation onto a target portion of a layer of radiation-
sensitive material at least partially covering a substrate; and
polarizing said beam of radiation in a transverse electric polarization.
24. A device manufactured according to the method of claim 23.
25. A polarizer device comprising:
a polarizing component; and
an absorber disposed on a backside of said polarizing component,
wherein said polarizing component interacts with an electromagnetic radiation

comprising first and second polarizations to reflect substantially all radiation of the first polarization and transmit substantially all radiation of the second polarization, and said absorber includes a material absorbing at a wavelength of said electromagnetic radiation, said material absorbing substantially all radiation of said second polarization.

26. A polarizer device according to claim 25,
wherein said polarizing component comprises a plurality of elongated azimuthally oriented elements, said plurality of elements being periodically spaced apart to form a plurality of gaps.

27. A polarizer device according to claim 26,
wherein said plurality of elongated elements are electrically conductive at the wavelength of the electromagnetic radiation.

28. A polarizer device according to claim 26,
wherein said first polarization is a transverse magnetic polarization and said second polarization is a transverse electric polarization.

29. A polarizer device according to claim 25,
wherein said polarizing component comprises a plurality of rings disposed concentrically, said plurality of rings being periodically spaced.

30. A polarizer device according to claim 29,
wherein said first polarization is a transverse electric polarization and said second polarization is a transverse magnetic polarization.

31. A reflective-type lithographic apparatus using a polarizer according to claim 25.

32. A polarizer device according to claim 25, wherein said material absorbing at said wavelength of the electromagnetic radiation is selected from the group: Al_2O_3 and anodic oxidized aluminum.